SCIENCE

FRIDAY, OCTOBER 21, 1898.

CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

CHEMISTRY AT THE JUBILEE MEETING OF THE AMERICAN ASSOCIATION.

THE union meeting of Section C of the American Association for the Advancement of Science and the American Chemical Society in Boston during the last week in August possibly approximated the desires expressed two years ago by the promoters of the joint session. The Jubilee meeting of the American Association dragged many who have not habitually attended the sessions from their seclusion. Those who did come, either for the first time or only after a lapse of years, observed an inspiring sight in the progress in the Association, and we are constrained to believe that Section C contributed its share to the success of the meeting.

Almost three hundred chemists attended the joint sessions. While Section C has been largely composed of members of the American Chemical Society, many more joined that Society, and numerous applications, in turn, were sent to the American Association. We are inclined to the opinion that did other of the affiliated societies but unite with the various sections in joint sessions only mutual good and benefit would result, as has been the case with Section C and the American Chemical Society.

Some 94 papers were presented before Section C and the American Chemical Society; 51 in full, 31 by abstract and 12 by title, representing the various branches

of chemistry. While there were many very interesting papers, perhaps the one that aroused most comment, favorable and conservative, was that of Dr. Chas. F. Brush 'On a New Gas in the Air—Etherion.'*

This gas, which is found absorbed by many substances, is a constituent of the atmosphere. Phosphorus pentoxide when cold absorbs it, but gives it up on heating. A year and a-half ago Dr. Brush, while looking for occluded hydrogen in glass, found not only that substance, but this new gas. The presence of the new gas made itself known by its enormous heat conductivity at low pressures. In a paper presented before Section B last year Mr. Brush gave the results of his experiments on the heat conductivity of various gases at low pressure. Hydrogen has been regarded the best gaseous conductor of heat. The occluded gas in powdered glass contained some hydrogen, but showed a greater heat conductivity. In repeated trials at purifying the gas by fractional diffusion, each time an increase of conductivity was observed until a gas was obtained with a heat conductivity one hundred times that of hydrogen. The experiments were not reported as continued to a point when the conductivity was the same before and after diffusion, so the impurity of the substance was readily acknowledged.

A table of figures was exhibited, showing the molecular weight, density, specific heat, relative mean molecular velocity and heat conductivity of the gases, whose heat-conducting curves appeared in a chart; and attention was directed to the evident close relationship between heat conductivity and molecular velocity of the gases.

From this relationship some other properties of the new gas were deduced. Taking the heat conductivity of the new gas at a hundred times that of hydrogen—a very conservative estimate—its mean molecular velocity at freezing temperature was calculated to be more than a hundred miles per second, and its density only a thousandth part that of hydrogen; while the specific heat was found to be six thousand times greater than that of hydrogen, this substance having the greatest specific heat heretofore known. These figures were adduced simply to show the order of magnitude that may be established by further investigation.

It was shown that a gas having properties anything like those cited could not possibly be confined to the earth's atmosphere, and hence the new gas, being found here, probably extends indefinitely into space and constitutes an interstellar atmosphere, whence its name. The possibility that *etherion* may be found to be identical with the so-called ether was touched upon, and Dr. Brush expressed the hope that it would be found to account for at least some of the phenomena heretofore attributed to the ether. No spectroscopic data were presented.

Dr. Edgar F. Smith's vice-presidential address on 'An Electric Current in Organic Chemistry' was a clear-cut history, first, of the application of electricity to chemistry in general, then to organic bodies in particular. The difficulties in investigating changes in organic substances wrought by the electric current are great, for no single line of reaction seems to be followed invariably and numerous by-products are formed. As this valuable contribution to the history of Electro-chemistry offered by a pioneer in and authority on the subject has been published in Science, no further reference will be made to it in this *résumé* of the Proceedings of Section C.

All the papers presented at the joint sessions were provisionally divided into the following subdivisions: Inorganic, Organic, Analytical, Technical, Physical, Physio-

* This paper was printed in the last number (page 485) of Science.—Ed. Science.

logical, Agricultural and the Teaching of Chemistry. Below is given a full list of the titles, but space will not permit abstracts of all the papers presented.

Dr. C. L. Reese exhibited some unusual quartz crystals from Alabama, containing petroleum inclusions.

A paper 'On the Facilities for Standardizing Chemical Apparatus afforded by Foreign Governments and Our Own,' read by Mr. L. A. Fisher for Mr. H. S. Pritchett, called attention to the work begun by the Coast and Geodetic Survey of the United States. In comparison with Germany and France few facilities are now offered by our government, practically none were in the past, so this is an important forward step.

Mr. N. Monroe Hopkins showed drawings of a new Electric Furnace for a 110-Volt Current of High Efficiency. It is easy of construction and inexpensive.

'Catalysis,' Dr. J. H. Kastle. Assumptions regarding catalytic processes from work on sulphonic esters involving the quadrivalence of oxygen were given. Brühl, in his work on hydrogen dioxide, prefers to regard water as containing oxygen unsaturated.

'Volumetric Apparatus,' G. E. Barton.

'Some New Forms of Apparatus,' J. M. Pickel.

'A New Apparatus for Determining the Relative Viscosity of Thick Oils and Softness of Plastic Matter,' A. W. Dow.

'Viscosimeter,' P. H. Conradsen.

Dr. F. W. Clarke called attention to the solubility of certain natural silicates in distilled water, in his paper on 'The Alkaline Reaction of Certain Natural Silicates.' The alkaline reaction is given very quickly by some and more slowly by others. This is an interesting point for geologists.

Dr. C. Loring Jackon, with I. H. Derby, gave the properties of pure, freshly prepared 'Ferrous Iodide.'

One of the most interesting sessions was that set aside for the discussion of the methods of teaching chemistry. Many outsiders were attracted by this part of the program. Dr. F. P. Venable, who had the leading paper, spoke 'On the Use and Abuse of the Formula in Teaching Chemistry.' Dalton seems to have been the first to use a regular system of symbols in making clear his idea of atoms. Berzelius then took up the practice, which gives us a universal but short-hand language in chemistry. While there is no question of the value of formulas and equations in teaching chemistry, some of the limitations of their use should be recognized. Symbols and equations can only partially represent the mathematical relations of the science, for there is no mode of indicating the physical forces always accompanying chemical reactions. Frequently the best constructed equation represents only one of the many reactions occurring at the same time, and there is no way to indicate conditions, relation of mass and so on. While useful, the dangers may be classified under four heads: methodism, mechanical, mathematical and idolatry.

Dr. Ira Remsen, in his paper on 'Teaching Organic Chemistry,' deprecated 'formula worship' and insisted upon having the thing talked about actually before the student and allowing him not only to see but handle the substance as much as possible. In laboratory work it is more essential to have the student familiarize himself with a few simple compounds first until a basis is established, avoiding the mechanical and acquiring the true spirit and right idea. Many teachers make the mistake of talking over the heads of students. This serves well to exhibit the professor's own mental adroitness, but does not aid the pupil much.

Dr. Hart, when speaking on 'The Teaching of Industrial Chemistry,' insisted that industrial application of what had been learned was the crowning point of all teaching of chemistry. He held the idea that only a

few of the many laboratory students are fit for manufacturing chemists, whose preliminary training should be of the highest order, especially in mathematics. The student should have a wide experience in chemical preparations and be able to purify quickly and study them on a large scale. After such training a man should be sent into a factory for at least two years as a student. Our hope lies in the fundamental training in good technical schools.

Dr. W. L. Dudley asserted, in presenting his remarks upon 'Teaching Analytical Chemistry,' that a good course in experimental work should precede qualitative analysis. If only a little time is available it should be devoted to experimental and not to qualitative analysis, for fear of turning out men who with only a smattering would think themselves real chemists. He did not believe in books for special students, but in true qualitative analysis containing thoroughly accurate methods for the common metals and semi-common ones. He insisted upon the absolute necessity for accuracy and that the course should be comprised of such methods and not of shorter ones that are inaccurate. In quantitative analysis it is better to teach manipulation and principles and not all the methods of analysis known.

In a paper by Dr. H. W. Wiley, read by Dr. E. E. Ewell, on 'The Influence of Temperature upon the Specific Rotary Power of Sucrose,' it was brought out that, contrary to the generally received ideas, there is a marked influence produced by change of temperature, the specific rotary power lowering as the temperature rises.

Three papers were presented by Drs. W. A. Noyes, Hillebrand and N. W. Lord upon coal analysis. The correct determination of water in a coal seems to be obtained only by drying the sample over sulphuric acid in a vacuum dessicator. This is a long method and scarcely applicable in technical work. This was a partial report of the Committee on Coal Analysis.

'The Determination of Water and Coke in Coal,' W. A. Noyes and N. M. Austin.

'Notes on Determination of Water in Coal,' W. E. Hillebrand.

'The Valuation of Coals,' N. W. Lord.

'Analysis of Mixed Acids,' Chas. E. Munroe.

'A Simple Color Reaction for the Detection of Methyl Alcohol,' S. P. Mulliken and Heyward Scudder.

'Detection of Nitro Group in Organic Compounds,' S. P. Mulliken and E. R. Barker.

'Electrolytic Determination of Tin in Tin Ores,' E. D. Campbell and E. C. Champion. This depends upon fusing the ore with sodium carbonate and sulphur, conversion of the sulpho-stannate into sulphide, then into double ammonium oxalate and electrolyzing.

'The Determination of Undigested Fat and Casein in Infant Feces,' Herman Poole.

'New Method for the Determination of Zinc,' A. C. Langmuir.

'Note on the Determination of Arsenic in Glycerine,' A. C. Langmuir.

Professor H. L. Wells, in his 'History of Double Salts,' stated that the laws governing this class of compounds seem very intricate. The chlorides do not seem to correspond to the bromides, and iodides, and halides of closely related metals often differ.

Dr. J. L. Howe and E. A. O'Neal stated, in their paper on the 'Use of the Electric Current in Forming Alums,' that they had prepared alums containing the metals aluminum, iron, cobalt, rubidium and cesium, by means of an electric current, but failed to get them of manganese and ruthenium. These compounds of rubidium and cesium are next. Dr. Howe, with S. G. Hamner, gave a method for accurately determining 'The Color of Sulphur in the

Gaseous State.' This is variously given in the different text-books.

Professsr O. C. Johnson gave 'A New Test for Nickel,' which consists of the treatment of the washed precipitates of nickelic and cobaltic oxides with potassium iodide. The presence of nickel is indicated by the liberation of iodine.

Dr. J. H. Kastle reported 'On the Occurrence of Barium and Strontium' in a large number of Kentucky and Ohio limestones. He drew out the point that where one metal of a triad is present in large quantities the other members of the series are invariably also present.

'The Estimation of Iron and Aluminum in Natural Phosphates,' H. W. Wiley and F. P. Veitch.

'A Study of the Tellurides,' Cabell Whitehead.

'Magnetic Ferric Oxide,' W. L. Dudley.

'The Action of Various Bases on Metallic Arsenites,' C. Wellington.

'The Action of Chromic Acid on Hydrogen,' C. L. Reese.

'The Action of Soft Waters on Metals,' Ellen H. Richards and Willis R. Whitney.

'A New Method of Standardizing Hydrochloric Acid,' F. K. Cameron and J. A. Emery.

Dr. C. Loring Jackson, in his paper entitled 'Certain Peculiar Reactions of the Tribromnitrophenols,' gave an account of his work on the action of sodium malonic ester, sodium acetoacetic ester and sodium ethylate on tribromnitrophenols and related substances with a view to determining why the bromine is replaced by hydrogen. Dr. A. B. Prescott's paper, 'On Certain Alkaloidal Periodides and the Volumetric Estimation of Alkaloids as Higher Periodides,' gave probably the highest possible periodides, viz., triodide of morphine hydroiodide, hexaiodides of strychnine, brucine and aconitine hydroiodides, and the octoiodide of atropine hydroiodide. Dr. M. Gomberg reported on 'A Periodide of Bromtriphenylmethane,' the only organic perhalide destitute of any element of the nitrogen family, except Victor Meyer's iodonium perhalide and Kastle's sulphonperiodide.

'On Tetraphenylmethane,' M. Gomberg.

'Hydrazo and Azo. Derivatives of Tetraphenylmethane,' M. Gomberg and A. C. Campbell.

'Camphoric Acid; Synthesis of the Neighboring Xylic Acid,' W. A. Noyes.

'The Propyl Phosphines,' Peter Fireman and E. G. Portner.

'The Action of Ethers on Phosphonium Iodide,' Peter Fireman and Ernestine Fireman.

'The Oxidation of Formic Aldehyde by Hydrogen Peroxide,' J. H. Kastle.

Dr. Charles F. Mabery reported a continuation of his great work on petroleum. In one paper, on the 'Unsaturated Hydrocarbons in Canadian Petroleum,' with W. O. Quayle, he stated that he had separated compounds containing seven, eight, nine and ten carbon atoms; a regular series of of sulphur compounds following the type of $C_nH_{2n}S$ beginning with C_9. Some sulphoxides according to the type $C_nH_{2n}SO_2$ were formed from these compounds. In continuing his work with E. J. Hudson 'On the Constituents of California Petroleums' from different sources he found in some large amounts of aromatic hydrocarbons, benzol, toluol, xylols, etc., and smaller amounts of naphthenes; in others the reverse was the case. Dr. Mabery also gave a paper 'On the Constituents of Commercial Paraffine' and succeeded in separating, by distilling under reduced pressure, a series of hydrocarbons according to the type of C_nH_{2n+2} beginning with C_{14} up to C_{20}. Working with H. L. Schrom, he obtained only negative results in his 'Efforts to add Hydrogen to Acetylene.' Sodium, amalgam, aluminum, and zinc with sulphuric acid, electrolysis and passing a mixture with hydrogen

from zinc and sulphuric acid over heated platinum sponge.

'Oxy-induline—a New Blue Dyestuff,' S. P. Mulliken and W. Kelley. This compound, $C_{36}H_{26}N_4O_4$, is readily formed by heating amidophenol hydro-chlorate. Sulphonated it is a fast and direct blue dyestuff.

'The Benzaldoxines,' F. K. Cameron.

'On True and Bis-Nitroso Compounds,' E. Kremers.

Dr. T. W. Richards gave an interesting historical review of the 'History of Physical Chemistry.' In one sense we are not wrong in looking on physical chemistry as a modern invention. While many of the fundamental generalizations are by no means recent, the sharp line drawn thirty years ago between physics and chemistry are but lately erased, and it is well accepted now that the same laws governing one class of phenomena are applicable as well to the other. Boyle, in the seventeenth century, discovered the law of the contraction of gases; Lavoisier forced the idea of the conservation of mass upon the scientific world. Dalton, Avogadro, Ampere, Gay-Lussac, Dulong and Petit, Davy and Faraday made great additions to our physico-chemical knowledge. Julien Robert Meyer and Helmholtz acquired a knowledge of conservation of energy. There were Hittorff's researches on electrolytic conductivity. Wilhelmy, forty years ago, worked on the speed of reactions along the lines suggested by Wentzel and Berthollet. The observations of these *savants* were used as a basis a decade later by Guldberg and Waage, when they promulgated the law of mass action as a result of the study of the progress and equilibrium of chemical change. Then why should it be regarded as new?

The growth of physical chemistry has not been commensurate with that of the other divisions of the science for several reasons, one of which was the necessity for dealing with the little understood subject of solutions. Van't Hoff having shown that substances in solution follow the same laws governing the aëriform state, and Arrhenius having explained the difference between solutions conducting electricity and non-conductors, the progress has been very rapid in the last ten years. Professor Richards attributed another cause as summed up in the word 'prejudice.' "Not only have untenable theories been held long after their time, but whole fields of study have been neglected by most chemists and physicists because they lay on the border line between the two sciences."

While higher mathematics is a most valuable instrument for a physical chemist, there is a serious danger of accurate mathematical processes leading to wholly erroneous conclusions because of incomplete or inaccurate data. One must be an accomplished physicist, chemist and mathematician to obtain the highest results in modern thoretical chemistry, and the number of men having time to acquire the necessary knowledge can never be large. Attention was called to the excellent laboratories of Nernst at Göttingen and Ostwald in Leipsic, and it was regretted that America did not have more men devoting themselves to pure science.

Dr. E. C. Franklin, in his paper on 'Some Properties of Liquid Anhydrous Ammonia,' showed that ammonia resembles water closely in all the properties which give water its unique position as a solvent. It is next to water as a general solvent for salts; there is a close resemblance in the power of dissociating electrolytes, some salts conducting even better in an ammonia than in a water solution. It forms ammonia of crystallization. Except water, its heat of volitization is greater than that of any other liquid. Its specific heat is as great as water.

'The Solubility of Di-ionic Salts of Weak Acids in Solutions of Stronger Di-ionic Acids,' A. A. Noyes and David Schwartz.

'The Solubility of Di-ionic Acids in Solutions of Di-ionic Salts of Other Acids,' A. A. Noyes and E. S. Chapin.

'The Solubility of Tri-ionic Bases in Solutions of Di-ionic Salts of Weak Bases,' A. A. Noyes and E. S. Chapin.

'The Solubility of Iodine in Dilute Potassium Iodide Solutions,' A. A. Noyes and L. J. Seidensticker.

Dr. A. A. Noyes, in this series of papers on 'Solubility,' showed that by means of equations the solubility of a substance in the presence of another can be calculated and so predicted.

'The Rate of Reaction between Silver Acetate and Sodium Formate; A Reaction of the Third Order,' A. A. Noyes and George T. Cottle.

'On the Influence of Silicon on the Heat of Solution of Coke in Cast Iron,' E. D. Campbell and W. E. Hartman.

'Passage of Bubbles through Media of Different Densities,' C. Gilbert Parker.

'Some Boiling-Point Curves,' F. K. Cameron and E. F. Thayer.

'Photographic Reproduction of Color,' Romyn Hitchcock.

'Sixteenth Annual Report of Committee on the Bibliography of Chemical Literature,' of which Dr. H. Carrington Bolton is Chairman. This report has been printed in SCIENCE.

The Sub-section of Physiological Chemistry met Friday afternoon in Room 8 Boylston Hall, Harvard University, a number of visiting physicians being present.

Dr. E. E. Smith, of New York, who was in charge of this division of the subject, gave the leading paper on 'American Research in Physiological Chemistry.' The beginnings of the application of chemistry to physiological research are twinned with the life of the American Association. It was inaugurated in 1842, when Meyer pointed out the valuable discoveries of Joule, Grove and Helmholtz in the domain of physics to the physiologists. Von Liebig's 'Animal Chemistry,' edited for the American profession by J. M. Webster, was the first important publication in America in this line, although in 1825 Dr. Beaumont, U. S. A., had obtained for the first time pure gastric juice in treating a gastric fistula from a gunshot wound. Dr. Caldwell, of Louisville, ridiculed Liebig's material views of the body as a 'corporeal stove for burning oxygen.' In the forties animal heat attracted the attention of physiologists, many of whom maintained that if the lungs were the stove the lungs should be hotter than the other parts of the body. Austin Flint (1862) found stercorin in human feces and that it differed from cholesterm by only two hydrogen atoms.

In 1869 Atwater prepared an essay on the composition of the American maize. Twenty-five years ago this same worker, in an address before the Maine State Board of Health, gave out the modern ideas of nutrition. All are well aware of the valuable work done now in various parts of the country by Dr. Atwater, or under his direction, upon the dietaries of people of different occupations in various localities. Aside from the scientific value of such observations, the economics of the question deserve the most careful consideration. Dr. Atwater has concluded that our national dietary is one-sided, and as the food production of the United States is out of balance, we should make use of a larger proportion of fuel materials, as fats and carbohydrates.

Probably the greatest problem of interest now is the study of proteids. The imperfect methods of separating these complex bodies have been greatly improved by Mallet and Wiley by the use of various saline solvents and precipitants, especially phosphomolybdic acid and bromine. Chittenden's work for the past fifteen years, Osborne's new nomenclature and crystal-

lization of vegetable proteids, and Hofmeister's separation of crystalline animal proteids, have yielded interesting conclusions in regard to the physiology of germination and plant growth in general.

Among the earliest metabolism experiments reported were those of Flint, who concluded that the secretion of urea was increased by muscular exertion. These ideas have been verified by subsequent investigations.

During the last few years the chemical factors causing certain diseases have been studied. Some claim that some complaints are due to increased presence of uric acid in the blood. Herter says that this acid is the result rather than the cause. Rachford presents evidence to show that the symptoms of toxicity are expressions of leucomaine poisoning dependent upon defective elimination. The importance of the subject is exhibited by the foundation and organization of the Institute of Pathology of the New York State Commission of Lunacy and the recent establishment of a professorship in pathological chemistry in the University and Bellevue Hospital Medical College, New York.

American contributions to physiological chemistry have hitherto been scattered in journals of chemistry, physics, medicine and general science at home and abroad. There are two journals published now in America dealing directly with the subject, *The American Journal of Physiology* and *The Journal of Experimental Medicine.*

Dr. S. Bookman, in his paper on 'Studies in Epilepsy; a Contribution to the Subject of Metabolism in Nervous Diseases,' gave conclusions based on chemical examination of stomach contents, blood and urine, together with urotoxic and serotoxic determinations in four cases. His other paper was on 'Investigations of the Nature of the Nissl Granules.' 'Proteids of the Brain' was Dr. P. A. Levene's paper.

'Experiments on the Metabolism of Matter and Energy in the Human Body,' by W. O. Atwater and F. G. Benedict.

'Experiments on the Metabolism of Alcohol in the Human Body,' by W. O. Atwater and F. G. Benidict, provoked not a little discussion, for, from the experiments reported, alcohol is a heat-producing food.

'On the Availability of Nutrients of Food Materials,' by W. O. Atwater and A. P. Bryant.

'A Dietary Study of a Bicycle Racer,' by W. O. Atwater and A. P. Bryant. The subject studied was Miller, the six-day champion racer of the world.

Changes in the ripening of cheese are usually attributed to micro-organisms, but Drs. S. M. Babcock and H. L. Russell, in a paper on 'The Properties of Galactase; a Proteolytic Ferment of Milk,' attributed the conversion of insoluble casein of a green cheese into peptones and other soluble proteids in ripened cheese to the important enzyme named in the title of the paper. Galactase appears to be allied to trypsin and is more abundant in cream, being precipitated by absolute alcohol. It is present in all milks; sheep, goat, horse, hog, buffalo, burro and human.

'Urinary Acidimetry and Alkalimetry,' Heinrich Stern.

'The Normal Degree of Urinary Acidity,' Heinrich Stern.

Dr. H. A. Weber, who was in charge of the subject of Agricultural Chemistry, gave a paper on 'Light: a Factor in Sugar Production.' The sugar content of plants is dependent upon climatic conditions, location and proximity to large bodies of water. For plants having short period of vegetation higher latitudes are more favorable, other things being equal.

'The determination of Starch in Agricultural Products,' J. B. Lindsey.

'A Note on the Growth of Lupins on Calcareous Lands,' E. W. Hilgard.

'Some of the Important Results of Recent Chemical Investigations of Plant and Animal Cells,' E. A. de Schweinitz.

'Composition of Ohio Wines,' A. W. Smith and Norman Parks. The ratio of glycerol to alcohol in native wines is usually taken as 7–14 to the 100. From pure wines made by the authors it varies from 3.9 to 11.8 to the 100 with an average of 5.

'The Determination of Turbidity of Water,' W. P. Mason.

'Efficiency of the Elmira Filtering Plant,' W. P. Mason.

Miss Isabel F. Hyams and Mrs. Ellen H. Richards, in presenting their paper, 'On the Composition of *Oscillatoria prolifica* (Greville) *O. rubescens* (de Candolle) and its Relation to the Quality of Water Supplies,' exhibited samples of the blue-green algæ found in Jamaica Pond, Boston, during the months of May, June and July. The algæ seem to be identical with that found in Lake Geneva in 1834–6, and later in Lake Mérat. During the growth of this moss the water assumes a brownish-red appearance, and on a hot, still day it separates out as a cream, which is easily driven by the winds upon the rocks, where it decays, giving off a disagreeable, fetid odor. While numerous substances were extracted from the moss, no ill effect is known which may be attributed to this source.

'The Le Seuer Electrolytic Process for the Production of Caustic Soda and Bleaching Powder,' read by Dr. C. L. Parsons, depends upon iron bars supporting a wire gauze as a diaphragm and the use of platinum-iridium anodes bound up in glass. In another paper, 'A Review of the Electrolytic Processes for the Production of Caustic Soda and Bleaching Powder,' by the same author, it was claimed that the process described would replace the Castner-Kellner and other processes on account of economy and efficiency.

'The Alum Question in Water Purification,' E. G. Smith.

Dr. C. F. Mabery and Mr. K. Landgrebe stated that 'The Effect of an Electrolytic Bath on the Tanning of Leather' was the reduction of the time consumed, and they observed that the percentage of nitrogen was lower in leather so tanned.

'Some Records in the Year's Progress in Applied Chemistry,' Wm. McMurtrie.

'The Progress in Utilization of City Garbage, with Special Reference to the New Plant in Boston,' Bruno Terne.

'On the Removal of Hardness from Water for Boiler Purposes,' C. F. Mabery and E. B. Baltzly. All kinds of hard water have from 90–98 per cent. of the lime present and all suspended matter are precipitated cold by treatment for twenty-four hours with half the calculated amount of sodium aluminate.

'New Process for the Commercial Production of Oxygen and its Industrial Applications," Romyn Hitchcock.

The meeting was most successful in every way.

CHAS. BASKERVILLE,
Secretary.
UNIVERSITY OF NORTH CAROLINA.

PHYSICS AT THE BOSTON MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (I.).

SECTION B of the American Association was organized with Vice-President F. P. Whitman in the Chair. His vice-presidential address, on color-vision, printed in the issue of SCIENCE for September 9th, was well received and constitutes a *résumé* of the subject of great value.

The program of the section included fifty titles of papers, of which forty were read before the section. Many of these papers were of very high order and almost every one of them was creditable and interesting.